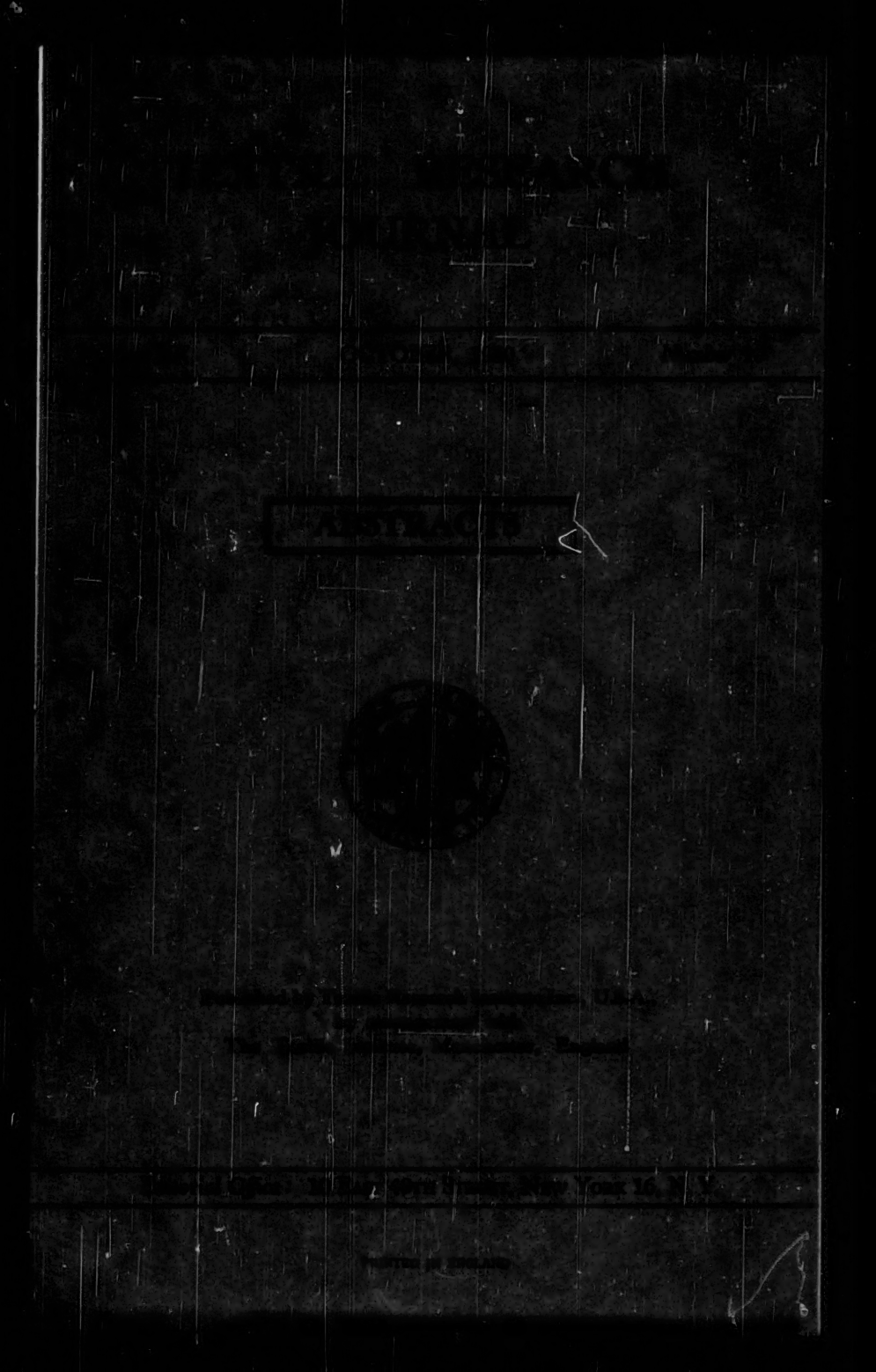


THE JOURNAL OF THE
TEXTILE INSTITUTE

ABSTRACTS

(The titles which are set in bold-face are intended as "scanning titles" for ease in classifying and filing. Where these are not substantially the authors' titles the exact titles are set in parentheses.)

1—FIBRES AND THEIR PRODUCTION

(B)—ANIMAL

Silk: Production in the British Empire. Consultative Committee on Silk. *Bull. Imperial Inst.*, 1946, **44**, 299-305. The establishment of a Consultative Committee on Silk, and a Technical Sub-Committee, under the auspices of the Imperial Institute is announced and reference is made to a "Memorandum for the guidance of those considering the development of sericulture in the Empire" drawn up by the Sub-Committee. The prospects for the expansion of the industry in Cyprus (with the concomitant mulberry cultivation) are discussed. C—**1B.**

Silk Moth Virus Diseases. K. M. Smith. *Discovery*, 1950, **11**, 175-178. A brief illustrated description is given of the nature and symptoms of the polyhedral virus diseases of insects, which include the yellow jaundice disease of silkworms. The control of injurious insects by infecting them with virus diseases is discussed. C—**1B.**

Sheep: Breeds in Australia. H. Marsh. *National Wool Grower*, 1950, **40**, No. 5, 13, No. 6, 18-19, No. 7, 19-20. These three articles describe fine-wool merinos, medium and strong-wool merinos, and the Polwarth, Corriedale and British mutton breeds. W—**1B.**

Sheep: The Merino in America. S. W. McClure. *National Wool Grower*, 1950, **40**, No. 3, 9-11, 35-36. A historical account of the merino in America is given. W—**1B.**

Sheep: Nutritional Diseases in Australia. H. Marsh. *National Wool Grower*, 1950, **40**, No. 3, 20-21. A brief account of some nutritional diseases of sheep in Australia includes copper deficiency, cobalt deficiency and a few others. W—**1B.**

Sheep-marking Products: Investigation. ("Contribution a la Mise au Point de Produits de Marquage des Toisons de Moutons.") J. Meybeck and C. Schirle. *Bull. Inst. Text. France*, 1950, No. 18, 25-39. A systematic study has been made of a series of fleece-marking products based on mixtures of crude wool grease, non-drying fatty substances, solvents, and water-insoluble organic or mineral pigments; in some cases rosin was added to increase the resistance to rubbing. The products were tested in the laboratory for fastness to rain and to light, and for removal in washing; they were then tested by wool growers in the field for ease of application and for resistance to weather and rubbing; they were finally given a second washing test. The results show that most of the products had satisfactory resistance to weather and to rubbing, and that all were entirely removed in washing. W—**1B.**

Sheep Dipping Trials with Derris, Bentonite-sulphur, DDT and Benzene Hexachloride. I. E. Coop and G. B. McLeod. *N.Z. J. Sci. Tech.*, 1949, **A30**, 292-304. Dipping trials have been conducted against the sheep ked and the sheep louse. Bentonite-sulphur was ineffective against both keds and lice. Derris and DDT were effective against keds but not against lice. Benzene hexachloride was effective against keds and has shown promise for controlling lice. The practical limitations and possibilities of the use of these materials in sheep dipping are discussed. W—**1B.**

(C)—Vegetable

Cotton: Production in Brazil. C. E. Ponsonby. *Empire Cotton Growing Review*, 1950, **27**, 90-99. A brief historical account is given of cotton growing in Brazil. In 1921 there was a great need for proper classification of cotton. From 1930 onwards the government took steps to encourage cotton production and increased yields were obtained. Seed production and distribution in São Paulo were brought under state control. The areas, production and annual yields of cotton in São Paulo from 1930-31 to 1948-49 are tabulated. Export figures are also given. In 1949 the reduced acreage of cotton in Brazil was attributed to the increase in coffee growing and to the use of soil wasting methods. Primitive methods of cultivation also restricted the acreage and there was a shortage of labour. The organisation of the Ministry of Agriculture was criticised in 1948. C—**1C.**

Jute and Jute Substitutes: Production and Spinning in India. B. Biswas. *Indian Textile J.*, 1950, **60**, 583-586. The cultivation and spinning of jute and jute substitutes in India are discussed. Several sources of jute substitutes are described (but the reader is warned against faulty spellings!). C—**1C.**

Sisal: Production and Processing. Charlotte Leubuscher. *Bull. Imperial Inst.*, 1948, **46**, 137-158. The spread of sisal growing, especially in British East Africa, from the original home in Mexico (where henequén fibre is produced from a related plant) is reviewed, and the present position of the sisal cordage, rope and sacking industries is discussed, with statistics. C—**1C.**

Patents

Cellulose Esters: Production. British Celanese Ltd. B.P.630,937 of 17/7/1947: 24/10/1949 (Conv. 17/7/1946). A process for the manufacture of stable cellulose acetate (or other lower fatty acid ester or mixed ester) comprises adding to the solution of the primary ester, obtained in the presence of sulphuric acid, sufficient of a compound of Mg, Zn, Al or an alkaline earth to neutralise the sulphuric acid, also 3-10 per cent. of ammonium bisulphate and 33-45 per cent. of water (in addition to the water required to react with unconsumed acid anhydride) and ripening the ester in the solution at 60-100° C. C.

Linear Polyesters: Production. Wingfoot Corporation. B.P.630,992 of 21/3/1947: 25/10/1949 (Conv. 16/7/1946). A linear super-polyester is obtained by mixing equimolecular proportions of a glycol having a chain of at least 4 C atoms, *e.g.* tetra- and hexa-methyleneglycol, or di-ethyleneglycol, with terephthaloyl or isophthaloyl chloride and heating the mixture until the product has a number-average molecular weight of at least 10,000. C.

Alkali-resistant Alginate Yarn: Production by Cross-linking. Alginate Industries Ltd., J. B. Speakman, N. H. Chamberlain and Catherine M. C. Dorkin. B.P.631,002 of 2/4/1947: 25/10/1949. Alginic acid material is swollen in water, deprived of water by steeping in a polar solvent and then treated with an organic di-isocyanate in a non-reactive polar solvent to effect cross-linking. The product withstands washing with soap and soda. For example, Ca alginate yarn is wetted out, steeped in three changes of methanol and boiled with a solution of hexamethylene di-isocyanate in acetone or methyl ethyl ketone. C.

Linear Polyamides containing Sulphur: Production. British Celanese Ltd. B.P.631,020 of 10/7/1947: 25/10/1949 (Conv. 20/7/1946). Linear polyamides containing sulphur are obtained by condensing equimolecular proportions of a dicarboxylic acid containing a sulphone group with a polyamine having two primary NH_2 groups, the other amino groups being secondary ones. The examples describe the production of a fibre-forming polyamide starting with 1:4-dichlorobutane as a source of δ:δ'-sulphone-divaleric acid on the one hand and of 1:9-diamino-5-azanonane on the other. The two products are condensed in meta-cresol. C.

Glass Filament Spinning Nozzle. Fibreglass Ltd., Andrew de Dani and R. W. Crosbie. B.P.631,608 of 22/2/1947: 7/11/1949. In the manufacture of glass filaments by directing a blast of air on a stream of molten glass flowing through a nozzle, the nozzle is made so long in relation to its diameter (not less than 3:1) that the outer surface of the stream of glass is chilled to the point of forming a skin, which is shattered by the air blast. C.

Rayon Spinning Box Traverse Mechanism. Courtaulds Ltd., H. C. Bolton and Leslie Rose. B.P.631,857 of 31/10/1947: 10/11/1949. The thread guide feeding

the extruded filaments to a rotating spinning box is traversed through the action of a follower on a cam that is rounded off at the tip and root over angles of at least 10°. The stroke of the thread guide is made sufficiently shorter than the height of the box (say 4½ inches for a 5-in. box) to permit of the automatic spreading out of the accumulated filaments so as to form a cake with cylindrical inside and outside surfaces. C.

Peanut Globulin Filaments: Production. David Traill, J. E. L. Thomas and Imperial Chemical Industries Ltd. B.P.632,240 of 22/5/1947 : 18/11/1949. In the continuous extrusion of an alkaline peanut globulin solution into an acidic, saline coagulating bath, followed by hardening of the filaments, the baths are kept at a temperature not exceeding 40° C. to minimise the tendency of the filaments to stick together on the godet wheels and like supports. A further precaution is now claimed in the addition of a cationic surface active agent to the saline bath, *e.g.* 0·1 to 2 per cent. of cetyltrimethylammonium bromide. C.

Continuous-filament Staplising and Spinning Machine. William Pool and Alexander McGill (British Celanese Ltd.). B.P.632,697 of 30/4/1947 : 28/11/1949. Apparatus for converting a bundle of continuous filaments into sliver, roving or yarn of staple fibre comprises two devices for gripping and forwarding the bundle in flattened form (*e.g.* pairs of drafting rollers), the second travelling faster than the first so that the bundle is under tension, but not so that it is ruptured thereby, and an impacting member presenting a narrow edge transverse to the taut bundle and vibrating 1,000 to 5,000 times per minute. The bundle of filaments passes on as a bundle of staple fibre and may be fed direct to drafting and spinning devices. In an example, an assemblage of cellulose acetate filament in the form of a ribbon 5 inches wide and totalling 340,000 denier is fed to a first pair of gripping rollers driven at 28½ inches per minute, and then to a second pair driven at 142½ inches per minute, between which it receives 2,000 blows per minute from a vibrator located 2½ inches from the first nip and 5 inches from the second nip. The product is a staple fibre top of staple length just over 5 inches and total denier about 68,000. C.

2—CONVERSION OF FIBRES INTO FINISHED YARNS

(A)—Preparatory Processes

Waste Cotton: Condenser Spinning; English System. C. B. Cummins. *Textile Manufacturer*, 1950, **76**, 207-212, 261-263, 270. Condenser or waste spinning is classified according to "hard waste" (thready nature, *e.g.* cop bottoms) and "soft waste" (waste from cotton mill preparatory processes). The machinery used in spinning these wastes is described and includes the preparing machine, breaking-up machine, scutcher, breaker card, Derby doubler, finisher card (ring doffer), a new type roller and clearer card, the condenser ring frame, and the 3-speed mule. Calculations for spindle speed, draft and twist on the 3-speed mule are included. Several illustrations are given. **C—2A.**

Natural Fibers Crimped to Order. P. M. Platzman. *Textile Industries*, 1950, **114**, No. 7, 84-88. The "Textralising" process of Alexander Smith and Sons Carpet Co., which permits permanent crimping of natural fibres, is described. Major components of the machine are feed rolls, steam injection system, setting chamber, trapdoors, and trapdoor back-weights. The feed rolls force carded fibres into the setting chamber, whose trapdoors and back-weights act as a restricting outlet, and the densely packed fibres are subjected to setting agents in the presence of steam. The contact period for crimp setting may be from 30 seconds to 3 minutes. After drying, the stock is blended with grease wools. The character of waviness is not destroyed by subsequent processing. A procedure for treatment in a continuous flow following the combs for delivery to gill box, converter or pin drafter is being devised for the worsted manufacturer. Preliminary observations show that roving requires fewer rubbings at the condensers, ends down decrease, and the finished yarn has a higher tensile strength. Results indicate the possibility of using low cost fibres or long, silky fibres with poor spinning properties by the expedient of crimping. Yarn weight may be reduced without loss of cover, handle or wear. Silk, cotton, mohair, and a number of synthetic fibres indicate desirable susceptibility to crimping. **W—2A.**

Double Doffer Condenser. J. A. B. Mitchell. *Textile Manufacturer*, 1950, **76**, 281-282, 308. A description is given of this type of condenser, which is regarded

as having two defects arising from the two-stage clearance of the swift. These defects are (1) a tendency to produce different counts on upper and lower spools, the top doffer slivers invariably being heavier, and (2) a tendency for the top doffer rings to take a greater proportion of the longer fibres in the blend. The results of investigations using different blends (including 2-in. and ¾-in. staple, fine crossbred, Saxony, wool and Rayolanda) show that, when the speeds of the top and bottom doffers are the same, the differences in count are small (0·1·5 Gala cuts) provided that ¾-in. rings are used on the top and 1-in. rings on the bottom doffer. The effects of using wider rings on the bottom than on the top doffers and also of running the doffers at different speeds and the attendant disadvantages of the latter procedure are discussed. In order to investigate the second defect, a blend consisting of 50 per cent. each of wool of 2-in. staple and wool of ¾-in. staple (each dyed a different colour) was processed, and there was no appreciable difference in shade between yarns from the top and bottom condensers. The difference in yarn count was 0·4, and the yarn from the bottom doffer was about 6 per cent. stronger. Using a 50/50 blend of 56s quality wool of 2-in. staple and Rayolanda of 6-in. staple, the top doffer yarn was found to be stronger and to differ negligibly in relative fibre constituents. The author points out that he does not claim that these results show the fallacy of the traditional view concerning the fibre length preferences attributed to the top doffer. They do, however, emphasise the difficulty of reproducing the fault.
W—**2A.**

Worsted Preparing Methods Evolution. ("Evolution et Tendance de la Préparation en Filature de Laine Peignée.") J. Thilliez. *L'Ind. Text.*, 1950, **67**, 291-295. The reduction in the number of operations in worsted drawing is discussed. A new theory suggests that this reduction both lowers the price and improves the quality of the yarn. Examples of practice in 1907 and in 1925 are given, and compared with recent French and American practice. W—**2A.**

(B)—Spinning and Doubling

"Tico" Synthetic Roller Covering. ("In the Cause of Better Spinning.") Textile Industrial Components Ltd. *Textile Weekly*, 1950, **46**, 14-16. An announcement is made of a material for roller cots that can be compounded either hard, medium or soft, and is indifferent to oils and temperature fluctuations. One brand is a plastic-bonded cork compound for uptwisters and worsted frames. The material is also used in anti-vibration pads for mounting textile machinery.
C—**2B.**

Textile Fibres: Drafting Forces. ("Le champ des forces de frottement.") V. Zotikov. *Rayonne*, 1950, **6**, No. 3, 85-91. [Extracts from a Russian textbook on spinning are translated into French.] The forces which operate on the sliver during drafting are considered. The effects on the field of these forces of varying (1) the pressure on the rollers, (2) the diameter of the rollers, and (3) the thickness and width of the sliver are discussed. Conclusions are tabulated. A dynamometric method for the investigation of the drafting forces (whereby the force required to pull fibres from the nip is measured) is briefly described. Some data obtained by the method are given. Results confirm speculations concerning the shape of the curve of the strength of the force field and of the character and variation of this field. All-metal rollers and rollers covered with an elastic material are compared with respect to their influence on the field of the drafting forces and the cross-sectional shape of the roving. The correction of defects in the latter by means of condensers is mentioned. C—**2B.**

Spinning on to Cones. ("Why Not Spin On to Cones?") R. A. Smith. *Textile World*, 1950, **100**, No. 8, 102-103, 184. A method for reducing the weights for transport of frame-spun woollen yarn is described. It consists essentially of spinning the yarn on to paper cones, thus eliminating the coning operation. Some comparative weights for wooden bobbins and paper cones are given, and it is stated that, if necessary, it is possible to obtain cones which will withstand steaming. Advantages include a saving in the initial expenditure on wooden bobbins, and no great loss is incurred if the cones are not recovered. Some adjustments which may be necessary are mentioned, and the limitations of the process are discussed. W—**2B.**

Woollen and Worsted Spinning. From Early Days to Present Time. R. S. Audley. *Fibres*, 1950, **11**, 295-298. A historical review is followed by accounts

of both intermittent and continuous present-day spinning methods. Improvements and refinements in modern machinery are mentioned, and the uses of flyer, ring and cap spinning in different sections of the trade are described. Other subjects discussed include mechanical doffing cap spinning frames and French drawn rovings. W—**2B.**

Worsted Yarn: Modified Processes. N. A. Whiffen. *Textile J. Australia*, 1950, **25**, 158-166, 193-194, 298-305. A comprehensive review is given of changes in normal worsted processes made possible by high-draft spinning and a reduction in the number of operations, or by the introduction of new types of machinery. Equipment used in modified worsted processes is described; this includes:—Whitin drawing, roving and spinning frames; Warner & Swasey pin-drafter; Saco-Lowell machines; McGlynn-Hays high-draft spinning frame; Ambler super-draft system; dry pot or centrifugal spinning system; medium-draft Continental spinning frame which has an apron system incorporated in the drafting zone; the "Hegemax" yarn guide. The possible application of modified processes in Australian industry is discussed. An investigation has been made into the quality of yarn from 4 grades of commercial Australian wool tops; the yarn was produced in the U.S.A. and Australia, using various modified processes for comparison with standard practice. Preliminary results show that, in general terms, the yarns made with fewer operations and considerably fewer doublings are equal in quality to good commercial yarns. W—**2B.**

(C)—Subsequent Processes

Conditioning Rooms: Equipment. Mellor Bromley & Co. Ltd. *Textile Weekly*, 1950, **46**, 98-101. Illustrations are given of yarn conditioning rooms fitted near the ceilings with Bahnson centrifugal humidifiers, heating units and mixing chambers and a system of ducting to lead the conditioned air round the walls. The automatic controls maintain temperatures within 1° F. and relative humidities up to 97 per cent. within 2 per cent. It is recommended that a conditioning room should be 8 to 10 ft. high and provide 120 sq. ft. of floor space for each 1,000 lb. of yarn that it is expected to store there at any one time. C—**2C.**

Patents

Textile Machine Dust and Fly Suppression System. R. Greg & Co. Ltd. and T. H. Sutcliffe. B.P.631,014 of 26/6/1947: 25/10/1949. The principle of the invention is to protect an operative from inhaling dust and fly when working at a textile machine by creating between him and the source of the nuisance a "curtain" of air of such size, disposition and velocity as will prevent the dust from reaching the operative but will not blow the dust into the room. An embodiment of the invention is described as fitted to a winding machine. Compressed air (provided by the air conditioning plant) is supplied to a system of conduits and outlets on each side of the machine to create "curtains" of air directed downwardly and outwardly in the region of the winding mechanism. C.

High-speed Spinning or Doubling Machine Spindle. J. L. Hilton and Hoffmann Tweedales, Ltd. B.P.631,452 of 13/3/1946: 3/11/1949. The claim is for a spindle for a spinning, doubling or similar machine that includes a bolster housing a roller-bearing insert having a body formed as a thin-walled, deep-drawn pressing, a roller race secured without welding in a race head, and a footstep secured without welding in the lower part of the said body. C.

Spinning Frame Electric Stop-motion. Prince-Smith and Stells Ltd. and E. E. Feather. B.P.631,503 of 14/8/1947: 3/11/1949. An electrically-controlled stop-motion for spinning and like machines comprises a pivoted circuit-closing detector, above each spindle unit but normally out of contact with the thread, which operates by the formation of a "lap" on the appropriate lower front roller to break the electro-magnetic circuit of a thread trap through which the roving is fed to the machine. Thus, the thread is not continuously chafed by the detector and the circuit that stops the machine is immediately broken so that there is no danger of burning out the coils of an electro-magnet as might happen if the circuit remained closed until the motion was re-set by an operative. C.

Fibre Web Forming Machine. F. M. Buresh. B.P.632,226 of 14/4/1947: 18/11/1949 (Conv. 1/5/1946). The invention relates to a process (and appropriate machine) for forming a uniform fibre web, whereby fibres are picked from a supply (*e.g.* a scutcher lap) by a toothed rotor, and carried by a fast air stream

(speed slightly greater than that of the rotor) to a rotary cage, the air stream being directed tangentially of the rotor so that the fibres are doffed from the rotor by centifugal force. The webs may be used in insulation, filtration, plastics, linoleum, sanitary towels, *etc.* C.

Sliver Compressing and Packing Apparatus. Riccardo Scarani. B.P.632,236 of 15/5/1947: 18/11/1949 (Conv. 5/11/1946). The invention relates to apparatus for compressing slivers into a container into which they are being fed and coiled down. The shaft of the rammer is lifted by a special lever device that allows the shaft to slip through its grip on the downward stroke. Thus, the compressing force is only the weight of the rammer whatever the height to which the container is filled. C.

Drafting Apparatus Sliver Guide. Howard & Bullough Ltd. and W. A. Hunter. B.P.632,266 of 2/9/1947: 18/11/1949. The invention relates to a guide trumpet which is designed so as to deliver sliver (or roving) to the nip of a drafting device substantially rectangular in cross section. The exit is guarded by two tapered cheeks which preserve the selvedges of the sliver. The exit is rectangular and further down the "trumpet" there are convexities or "swells" which serve to compress the sliver and force it into the rectangular form. C.

Carding Engine Flat Stripping Brush Clearer. Philipson & Co. (Bolton), Fred Leach and Fred Greenhalgh. B.P.632,268 of 9/9/1947: 18/11/1949. The claim is for a device for clearing the stripping brush for card flats. The clearer is secured to two channel-shaped members each of which is pivotally mounted on an angular member carried by a bracket which is rotatably mounted on the shaft of the stripping brush, the angular members being controlled by springs to keep the clearer away from the brush during the normal working of the brush. C.

Spinning Containers of Centrifugal Spinning, Twisting and Analogous Machines: Driving Arrangements. Prince-Smith & Stells Ltd. and E. E. Feather. B.P.641,312 of 9/8/1950. A centrifugal spinning or like machine is provided with mechanism whereby breakage of a driving tape causes unwinding of the material spun in all the containers to be initiated automatically, the momentum of the rotating containers which have lost their driving tape completing their unwinding. For this purpose, electro-magnetically controlled means are associated with the tensioning elements of the tape driving mechanism and with the front carriage release mechanism. W.

Woollen Spinning Frame. J. T. Drennen (to American Viscose Corporation). U.S.P.2,442,761 of 8/6/1948. A roving guide is provided in front of and adjacent to the back restraining rollers to prevent any considerable false twist escaping through the nip of the back rollers. The guide deflects the roving from the straight line course it would otherwise take from the back rollers to the top of the false twisting tube. A deflection of 10-15° is usually adequate. A high degree of false twist can then be used, *e.g.* in drafting long or smooth-surfaced fibres. W.

3—CONVERSION OF YARNS INTO FABRICS

(A)—Preparatory Processes

"Arunconer" High-speed Cone Winding Machine. ("Coning of Yarns speeds Mill Production.") Arundel, Coulthard and Co. Ltd. *Textile Weekly*, 1950, **46**, 18-20. An announcement is made of a machine for winding cones at high speed; the traverse is 6 inches and cones up to 10 ins. at the base can be wound. The stop-motion is of the detector pin type and the tension of the spinning disc type. Each side of the machine is fitted with a differential motion. C—**3A.**

Wood Beams: Application in High-speed Beaming. *Textile Mercury & Argus*, 1950, **123**, 67-69; *Textile Weekly*, 1950, **46**, 112-114. Claims are made, on the score of weight, strength and rigidity, for the greater efficiency of wood over metal for the construction of beams for operation at high speed. C—**3A.**

(C)—Weaving

Keighley Dobby: Timing and Setting. ("Negative Dobby Shedding Motions.") W. Middlebrook. *Textile Manufacturer*, 1950, **76**, 283-284, 308. Continuing his articles on dobby shedding motions,[1] the author gives technical

information on the timing and setting of the Keighley dobby. ([1]See *J. Textile Institute*, 1950, **41**, A348.) C—**3C.**

Weaving Sheds: Organisation; Simple Statistical Aids. I. Laird. *Textile Manufacturer*, 1950, **76**, 264-266. Continuing his articles[1] on the use of simple statistical aids in weaving sheds, the author deals with semi-log or ratio graphs. These can be used to compare the production of sheds with widely differing outputs. ([1]*J. Textile Institute*, 1950, **41**, A349.) C—**3C.**

(D)—KNITTING

Fancy Interlock Knitted Fabrics. ("Fantaisies sur métier Interlock.") P. Delangre. *Rayonne*, 1950, **6**, No. 2, 99-103; No. 3, 93-96; No. 4, 59-61. Instructions are given for the production of various fancy effects on the Interlock knitting machine. C—**3D.**

Moss Crêpe: Knitting on Interlock Machine. ("Crêpe mousse sur métier Interlock.") R. Brebar. *Rayonne*, 1950, **6**, No. 3, 49, 51, 53. Some practical hints are given on the knitting of moss crêpe fabrics. The main points concern the prevention of snarling by passage of the yarn through a narrow tube, and the dependence of the direction of winding of the bobbin on the twist of the yarn (whether S or Z). C—**3D.**

Wool-Nylon Socks: Dyeing Problem Overcome. *Wool Record*, 1950, **78**, 580. The irregular streakiness formerly obtained in wool socks reinforced with nylon may be eliminated by knitting the toes and heels with a wool and nylon folded yarn so that a marl-like effect is obtained. Alternatively, pre-dyed nylon, dyed to exactly the same shade as the woollen yarn, may be used as a splicing thread in the usual way. W—**3D.**

(G)—FABRICS

Carpet Production. G. B. Angus. *J. Textile Institute*, 1950, **41**, P271-P287. In this general review, the subjects discussed include designing, dyeing of the pile yarn, beaming, preparation of the weft yarn; figured Wilton, plain Wilton, Spool Axminster, Gripper Axminster, Chenille Axminster, and figured tapestry carpets; finishing, sewing and making up. Recent developments described include manufacture of pile fabrics by causing fibres to adhere to a backing by attaching fibres sprayed with adhesive to a pre-coated rubber hessian, and a method in which fibres assume a position with their axes at right angles to the planes of two plates at a very high voltage. W—**3G.**

Mixture Fabrics: Nylon/Wool Blends. ("Specialised Field Waiting for Nylon and Wool Blends. Development Promises Whole Range of Superior Quality Fabrics.") R. L. Wentz. *American Wool and Cotton Rep.*, 1950, **64**, No. 28, 23, 79. Some problems relating to the production of nylon/wool fabrics are discussed.. The different proportions of each component affect the properties of the resulting material. Washable fabrics made by blending wool with nylon, and knitwear from cashmere and nylon are described. The aim is to achieve a proper balance between the two fibres in such a way that they complement each other. W—**3G.**

PATENTS

High-tenacity Rayon Typewriter Ribbon. British Celanese Ltd. B.P.630,915 of 1/4/1947: 24/10/1949 (Conv. 5/4/1946). It is claimed that typewriter and cash-register ribbons, superior in clarity of print to silk ribbons, are obtained by using as warp and weft high-tenacity rayon obtained by stretching cellulose acetate yarn to ten times its original length and completely saponifying the acetate, followed by a shrinking treatment of the fabric with caustic alkali and impregnation with the required ink. The fabric may be prepared in wide pieces, then cut into ribbons and treated with a sealing composition to consolidate the slit edges. C.

Nylon Fabrics: Stitch Setting at the Knitting Frame. Wolsey Ltd., Peter Alexander, Henry Burrows and P. D. Smith. B.P.631,456 of 14/6/1946: 3/11/1949. Instead of employing a separate boarding operation to set the stitches, it is proposed to wet the nylon (or other thermoplastic) yarn before knitting and directing a stream of hot air (about 280° F.) at the fabric in the vicinity of the knitting needles. C.

Automatic Cop Winding Machine Bobbin Feeding Mechanism. Maschinenfabrik Schweiter A.G. B.P.631,476 of 28/2/1947: 3/11/1949 (Conv. 11/3/1946). The claim is for a device for automatically feeding empty bobbins of any usual type to an automatic bobbin-changing winding machine. A conveyor rotating horizontally is provided with perpendicular cups for the reception of empty bobbins, the cups having apertures at the bottom which are opened or closed in accordance with the relevant winding operation. Between the winding machine and the lower edge of the conveyor is a guide channel or hopper along which an empty bobbin, falling out of its cup, travels to a horizontal collecting member close to the winding position. C.

Nylon Weft Belting Fabric. United States Rubber Co. B.P.631,617 of 27/6/1947: 7/11/1949 (Conv. 15/8/1946). A strong belting fabric (breaking load at least 12,000 lb. per sq. in.) characterised by low longitudinal stretch and high transverse flexibility is woven with low-twist nylon weft and cotton ply warp (equiv. to 5s or coarser) which before weaving has been wetted with water containing a wetting agent (*e.g.* an alkali abietate), stretched and dried under tension. The example refers to a fabric with 36 ends per inch of 7·28/10 cotton cord and 10 picks per inch of 210/8 denier nylon. C.

Circular Knitting Machine Auxiliary Fabric Tensioning Device. Mellor Bromley & Co. Ltd. and Arthur Shortland. B.P.631,759 of 1/5/1947: 9/10/1949. A circular knitting machine for producing strings of articles, in which the necessity arises to change from knitting a pouch (*e.g.* a toe part of a stocking) to rib knitting (*e.g.* of a stocking top) without the accumulation of loops ("tucking"), is fitted with auxiliary tension mechanism comprising the usual spirally grooved rod and its lifting member and a catch or detent that locks the rod in its raised position. C.

Faced Knitted Fabric: Production. Jaska Ltd. and J. V. E. Hunt. B.P.631,806 of 8/10/1946: 10/11/1949. Knitted fabric with a face that resembles a woven fabric and is suitable as dress material is made by laying in at regular intervals in a ground fabric two successive courses of face yarn and interlooping them with predetermined or selected loops throughout the whole course so that portions of the face yarn extend as "floats" between these selected loops. C.

Rotary Shuttle Box Loose-reed Loom. Walter Pollard (1923) Ltd. and Henry Williams. B.P.631,812 of 19/12/1946: 10/11/1949. A rotary shuttle box loose-reed loom wherein shuttle change is initiated by a weft feeler motion is fitted with a screen for the feeler slot in the single shuttle box front which, in the event of more than one shuttle being in the shed at once, is moved in front of the slot and sets in train, through the feeler motion, the stop-motion of the loom. C.

Straight Bar Knitting Machine Sinkers. Mellor Bromley & Co. Ltd. and Arthur Shortland. B.P.631,835 of 13/5/1947: 10/11/1949. A sinker for a straight-bar knitting machine is reinforced by a U-shaped plate that grips the butt. C.

Vibration-frequency Thread Tension Control Device. United States Rubber Co. B.P.631,956 of 25/9/1946: 14/11/1949 (Conv. 14/12/1945). The claim is for a method of producing a package of thread under uniform tension by advancing the thread under tension past two fixed points, setting up a vibration in the thread between the two points, and using a beam of light to detect fluctuations in the vibrations, produce corresponding electrical impulses, and excite a parallel resonant circuit so that the tension is corrected and the vibration is kept constant. The invention is particularly for winding golf balls with rubber thread so that they are of uniform density. It depends on the relationship $f = k\,[(1/L) \times \sqrt{S/d}]$ where f is frequency of vibration, k is a constant, L is the length between the fixed points and S is the tension in the lb. per sq. inch. C.

Electronic Warp Let-off Motion Control. W. W. Triggs (for Crompton & Knowles Loom Works). B.P.632,080 of 8/10/1946: 16/11/1949. The invention relates to a warp let-off motion in which the beam is turned by an electric motor the circuit of which is controlled by a grid circuit including an electronic tube. As the warp tension reaches a predetermined limit a contact member moves from a first to a second position and effects a corresponding change in the grid circuit. The motor is thereby driven faster until sufficient warp is delivered to relieve the tension. There are 26 claims and the illustrations include a circuit diagram. C.

Axially-adjustable Circular Knitting Cylinder Clutch Mechanism. G. Stibbe & Co. Ltd., E. V. Stibbe and A. M. Brown. B.P.632,085 of 13/1/1947: 16/11/1949. The invention relates to a clutch for driving the needle cylinder in a circular knitting machine of the type in which the cylinder is slidably mounted on a sleeve for axial adjustment to vary the stitch length, and consists of complementary jaws or dogs on the cylinder and sleeve. C.

Shuttle Peg Anchorage. Harry Wild. B.P.632,087 of 30/1/1947:16/11/1949. To reduce wear on a shuttle peg when retained in a shuttle by the usual spring-pressed thimble it is proposed to introduce a friction roller or the like between the base of the peg and the thimble surrounding the spring.

Weft-knit Welt Fabric: Knitting. Scott & Williams Inc. (assignees of A. E. Page and F. R. Page). B.P.632,145 of 24/11/1944:17/11/1949 (Conv. 27/11/1943). The invention relates particularly to the knitting of fine-gauge inturned welts for stocking tops. The first of 16 claims is for "a weft knit welt fabric, the first few courses including, in at least one course, one weft-uniting loop at a recurring wale separated by two intervening needle wales, there being one or more following courses having loops at all the wales, the welt-uniting loops being interknitted with a following course of the stocking to form a welt." Details are shown in six sheets of drawings. C.

Warp Beam. Willy Grob. B.P.632,202 of 14/2/1947:17/11/1949 (Conv. 8/5/1946). The claim is for a warp beam that comprises a cylindrical tube (of relatively thin, light metal) and a jacket formed of parallel staves and extension staves (for adjusting the axial width of the beam) which when mounted on the tube leaves a longitudinal groove for the reception of, say, a beam bar for the positive location of the warp ends. C.

Automatic Loom Weft-replenishing Mechanism. (1) D. W. Shimwell. B.P. 632,245 of 24/6/1947:18/11/1949. (2) D. W. Shimwell, Messrs. McGregor & Balfour Ltd., and E. M. Sparrow. B.P.632,258 of 12/8/1947:18/11/1949. These inventions relate to means for preventing the occurrence of a short length of weft in the warp shed during the last pick prior to weft replenishment when weaving with "solid cops". (1) Means are provided which when the cop has been woven down to a predetermined length sever the weft between the shuttle eye and the cloth, extract the cop end from the shuttle, allow the shuttle to make one or more picks and then load the shuttle with a new cop. Details are shown in seven sheets of machine drawings. (2) A feeler is mounted in the shuttle which bears continuously upon the cop and, when the cop has woven down to a predetermined extent, allows a plunger mounted in the shuttle to move into engagement with means to stop the loom or effect a cop change. C.

Pirns: Repairing and Re-inforcing. Thomas Brindle. B.P.632,281 of 2/12/1947 and 8/6/1948:18/11/1949. The invention relates to a method of manufacturing, re-inforcing or (particularly) repairing wooden or cardboard pirns by holding the pirn in a pair of half-dies of suitable form and forcing in molten metal so as to cast a metallic base on the prepared end. C.

Graduated Thread Tensioning Device. Albert Brugger. B.P.632,312 of 28/1/1947:21/11/1949 (Conv. 6/3/1946). The claim is for a thread tensioning device that can be set according to the graduations on a spiral-shaped disc. A feeler member engages the rim of the disc and transmits a corresponding force to a spring that determines the amount of "drag" on the running thread. The illustrations show the disc applied to the compression spring of a pair of friction discs and also to the swing strap that controls the "fingers" of a gate drag. C.

Lace Curtain Machine Adjustable Sley Bar. Newton & Pycroft Ltd. and Philip Reader. B.P.632,431 of 5/7/1946:28/11/1949. The invention relates to means that can be operated at a convenient point, remote from the sley bar itself, for adjusting the sley bar and therefore the length of the guiding strings between the jacquard mechanism and the jacks of a lace curtain machine. C.

Knitting Machine Yarn Waxing Device. Eric Hoyle. B.P.632,440 of 4/6/1947: 28/11/1949. In a device for waxing yarn as it passes from a supply to the operative parts of a machine for producing fabric (*e.g.* the needles of a flat-bed knitting machine) the plate or platform on which the wax disc is mounted is fixed but the wax disc is free to rotate. C.

Circular Knitting Machine Boarding Guide Line Marking Attachment. Scott & Williams Incorporated (assignees of I. W. Grothey and F. R. Page). B.P. 632,650 of 16/7/1946: 28/11/1949 (Conv. 26/11/1945). The invention relates to means for differentiating certain needles of a circular knitting machine and applying to them a fugitive dye so that distinct lines are formed in a stocking from the wale to the heel and then along the sole and also down the front to serve as guide lines when the operative places the stocking on the forms of a pre-boarding apparatus, especially when nylon is the material. The needles are differentiated by modifying the butts that operate their jacks and the dye is brought to the needles by means of a pair of rotating discs one of which dips in a dye well. The lines are slightly offset from the true centre positions so that they may both be seen by the boarding operator from one side of the form. C.

4—CHEMICAL AND FINISHING PROCESSES

(B)—Boiling, Scouring, Degumming and Washing

Scouring with Synthetic Detergents. *Dyer*, 1950, **104**, 91-94. Problems associated with the use of synthetic detergents for scouring wool are presented from the points of view of the wool scourer, the sewage engineer and the manufacturer of the detergents. The advantages claimed for the use of Lensex and Lissapol N in scouring yarn are stated. Raw wool scouring presents greater difficulties and the whole problem is complicated by the question of effluent disposal. Sewage disposal plants are not equipped to deal with synthetic detergents in quantity, and, to avoid danger to the public health, there must be collaboration between sewage authorities and the manufacturers of synthetic detergents. The manufacturers claim that the dangers are greatly exaggerated. Acid-cracking is the most difficult problem to solve. W—**4B.**

(F)—Carbonising

Reclamation of Textile Fibres: Present and Future Methods of Separating. J. B. Speakman. *J. Textile Institute*, 1950, **41**, P202-P207. Some of the problems encountered in the reclamation of textile fibres and possible methods for solving them are discussed. Methods of treatment may lead to separation without destroying the fibrous form of any component, or to separation by destroying all but the most valuable fibres. Treatment of rags with hydrochloric acid gas carbonises cotton and viscose rayon, but not silk, nylon and cellulose acetate. The importance of rapid methods of identifying fibres is stressed and some properties of potential value in the sorting of rags are suggested. Since cellulose acetate and nylon develop static electricity in carding, separation of wool in admixture with either of these synthetic fibres may be possible by carding at a suitable relative humidity and collecting the charged fibres on earthed surfaces. Cellulose acetate may be carbonised under laboratory conditions if a mixture of hydrochloric acid and acetic acid is used. Other possibilities include the saponification of cellulose acetate, and the parchmentising action of 65 per cent. sulphuric acid on cotton and other cellulosic material. Greater difficulty is experienced with regenerated protein fibres, and one suggestion is to pass carded material through Peralta rollers at a low temperature. When economy demands the recovery of the synthetic fibres, the possibility of solvent extraction is indicated, even if the recovered material is of value only in some other industry, *e.g.* manufacture of paint and plastics. Alternatively, the solution and regeneration of wool may prove possible. W—**4F.**

(I)—Dyeing

Warp Dyeing Machine. Baldwin and Heap Ltd. *Textile Manufacturer*, 1950, **76**, 299. A rotary, two-beam warp dyeing machine is briefly described. In this machine all the operations of steaming, washing, bleaching, dyeing and drying can be performed automatically without handling the yarn. C—**4I.**

Yarn Packages: Dyeing in India. B. B. Gandhi. *Indian Textile J.*, 1950, **60**, 572-578. Current practice in Indian mills for the dyeing of yarn on cheeses, cones and beams is discussed. The selection of extracting and drying equipment is considered. C—**4I.**

Helindon Dyestuffs for Wool. H. Luttringhaus, J. E. Flint, and A. A. Arcus. *Amer. Dyes. Rept.*, 1950, **39**, P2-P11. The use of large amounts of caustic alkali in dyeing wool with vat dyes may be avoided by using Helindon dyes. These

dyes are absorbed by wool in the presence of small amounts (0·5 per cent.) of caustic soda and the degree of absorption is decreased in the presence of larger amounts of alkali. It is suggested that these dyes, like Indigo, are molecularly dispersed under these conditions and can thus penetrate the wool fibre. On the other hand the anthraquinone vat dyes (Indanthrenes) are absorbed by wool only in the presence of 4 per cent. of more caustic soda, increase in the alkali concentration causing an increase in the degree of absorption. It is shown by diffusion experiments that increase in the alkali concentration decreases the particle size of these dyes to the same order as that of Indigo and the Helindons in the presence of small amounts of alkali. The optimum conditions for dyeing the various Helindon dyes are given. W—**41.**

Chlorination: Some Effects on Fibre Properties in Relation to Knitwear Dyeing—19. "Colourist". *Hosiery Times*, 1950, **23**, No. 256, 41, 43, 45. The way in which chlorination modifies the affinity of wool for dyes is considered. The subjects reviewed include the work of Harris and Smith on the acid-combining capacity of chlorinated wool, Elöd on the absorption of acid wool dyes, and Barritt and Elsworth on the acid-combining power of wool before and after chlorination. Reference is also made to the work of the last two authors on the dyeing behaviour of untreated wool and chlorinated wool using level-dyeing and fast-to-milling acid wool dyes. W—**41.**

Wool: Absorption of Acid Dyes; Effect of Sodium Sulphate. B. Benson and P. Larose. *Canadian J. Res.*, 1950, F, **28**, 238-256. The sorption of Orange II by wool has been determined at the boil in the presence of various amounts of sulphuric acid and of sodium sulphate within the range used in practice. Some experiments were also carried out with hydrochloric acid and sodium chloride. It is shown that the results for any one acid and salt concentration can be represented by a simple relation which has the same form for all results. Although this relation has the form of an adsorption isotherm, it remains purely empirical at present. The salt effect is readily explained on the basis of the Donnan equilibrium. The effect of acid strength is to fix the saturation value for the dye. W—**41.**

Dyeing of Wool. ("Current Trends in the Wool Industry.") H. Luttringhaus. *Amer. Dyes. Rept.*, 1950, **39**, No. 14, P463-P464. The current trend in the wool industry is towards increased use of those dyes with which improvements in one or more of the following factors in dyeing can be obtained: penetration, uniformity of coverage, fastness to light, fastness to fulling, fastness to peroxide bleaching, length of dyeing cycle or preservation of wool fibre. Metallised acid dyes, leuco-esters of vat dyes and Helindon vat dyes make these improvements possible. Dyeing assistants are now available with which the nylon in nylon/wool mixtures can be more easily either left white or dyed tone-in-tone. W—**41.**

Chlorinated Wool: Dyeing Properties. I—Qualitative Experiments using Wool Chlorinated at Various *pH* Values. C. B. Stevens, C. S. Whewell, and R. K. Bradley. *J. Soc. Dyers and Col.*, 1950, **66**, 435-438. The dyeing properties of wool treated in solutions of sodium hypochlorite at various *pH* values has been investigated qualitatively, and it has been confirmed that, in general, when wool chlorinated under neutral or alkaline conditions and unchlorinated wool are dyed together in the same bath, the chlorinated wool is dyed less deeply. Wool treated in acid solutions of hypochlorite absorbed more dye than unchlorinated wool when samples of both were dyed together. With basic dyes, the chlorinated wool was dyed more deeply than the unchlorinated wool irrespective of the *pH* at which the treatment was carried out. The contrast between the pairs of dyed samples was assessed by visual examination, and the results of the experiments together with details of the dyes and assistants used are tabulated. W—**41.**

(J)—PRINTING

Printing Screens: Coating. F. W. Mackenzie. *Dyer*, 1950, **103**, 803-805. The preparation of a screen for printing purposes involves coating with light-sensitive substances. A brief illustrated account is given of the coating of screens by brush, roller blade, doctor blade, "weir", and "whirler" methods. C—**43.**

Textile Prints: Design. *Textile Manufacturer*, 1950, **76**, 292-294. Some aspects of textile print design are discussed. The relationships between the artist and those who put his designs to practical use are considered. Other subjects briefly

considered include the question of using discharge or blotch printing, outlines and "flushing" of colours, repeats, colourings and the choice of design. C—**4J.**

(K)—FINISHING

N-Carboxy Anhydrides of Amino Acids: Application to Wool. P. Alexander, J. L. Bailey, and D. Carter. *Textile Research J.*, 1950, **20**, 385-399. The preparation and use in the control of felting shrinkage of wool of some N-carboxy anhydrides of amino acids are described. The optimum conditions for rendering knitted wool fabric unshrinkable with N-carboxy-glycine anhydride involve initial pretreatment in a buffer at *pH* 9, drying to a regain of approximately 17 per cent., and treatment with the anhydride in diethyl carbonate under specified conditions. Polymers from some of the higher amino acids do not reduce felting shrinkage. The nature of the reaction between N-carboxy-glycine anhydride and wool has been investigated. The average molecular weight of the polymer produced is a function of the *pH* of the solution, being greater at a higher *pH*. The polymer is shown to be held on the fibres by physical forces or hydrogen bonding. It is concluded that resistance to milling shrinkage arises from the small reduction in scaliness coupled with local adhesion effects of both fibres and yarns. W—**4K.**

Shrink-Resistant Finishes. E. R. Trotman. *Textile Recorder*, 1950, **68**, No. 808, 70-71. A general article in which the theory of shrinkage involving the differential friction effect is discussed, and methods for reducing the felting or shrinkage property of wool based on this theory are outlined. W—**4K.**

Woollen and Worsted Fabrics: Dimensional Stability. W. von Bergen and C. S. Clutz. *A.S.T.M. Bulletin*, 1950, No. 167, 74-82. In addition to the two main types of cloth shrinkage (relaxation shrinkage and felting shrinkage), a third type of movement in wool fabrics—that caused by change in relative humidity—is of importance in connection with the appearance of men's lightweight suitings. Cloth stretches on going from low to high humidity and shrinks on going in the opposite direction. The main processes to which a piece of cloth is subjected in order to reduce relaxation shrinkage to a minimum are considered, and pressing during tailoring is discussed. Several experiments are described, and these include investigations into the movement of fabrics with relative humidity and the influence of steam pressing on gabardine. The study of relative humidity motion in conjunction with steam test shrinkages emphasises the inaccuracy of shrinkage test procedures. W—**4K.**

(L)—PROOFING

Moth-Resistant Treatments: Application to Fabrics Used by the Defence Services of Canada. C. H. Bayley. *Canadian Textile J.*, 1950, **67**, No. 16, 45-49. A report on the efficiency of mothproofing chemicals, and on methods of larval testing and chemical estimation of proofing agents on the fibres. The larval test method is essentially the same as the A.A.T.C.C.-A.S.T.M. Fabric Loss procedure using larvæ of the black carpet beetle. An attempt has been made to devise a system of rating the severity of the attack. Details are given of tests for permanence (in relation to laundering and dry-cleaning) of mothproofing agents. Laboratory and large-scale methods for applying mothproofing agents by cloth finishers, launderers and dry-cleaners are described. The results of tests using two commercial compounds, sodium fluoride, DDT, and 2,2'bis(*p*-methoxymethyl)1,1,1,trichloroethane are given. W—**4L.**

Mothproofing: Anomalous Results of Tests. K. P. Lamb. *Nature*, 1950, **166**, 37. The moth-proofing agents used were (*a*) a substituted urea derivative, and (*b*) a sulphonic acid derivative of triphenylmethane, and each was applied in conjunction with a neutral levelling acid dye (Xylene Fast Blue). The method of treatment is described. Moth-proofing efficiency was determined by loss of weight of fabric tests with the larvæ of two species of clothes moth, and further determinations were made after two, four, and six washings of the domestic type using a commercial soap powder. Chemical analysis showed a loss of the moth-proofing agent with washing, but there was a steady increase in moth-proofing efficiency after each washing. Further tests with agent (*a*) but without dye gave the usual decrease in efficiency of moth-proofing with each washing. W—**4L.**

Antimycin A, an Antibiotic with Insecticidal and Miticidal Properties. G. S. Kido and E. Spyhalski. *Science*, 1950, **112**, 172-173. Initial trials have shown

that antimycin A (which appears to be an optically-active, nitrogenous phenol) causes mortality to some insects by ingestion rather than by contact action. On wool fabric it gives protection against attack by the black carpet beetle (*Attagenus piceus* (Oliv.)), but fails to give protection against the larvæ of the common clothes moth (*Tineola biselliella* (Hum.)). W—**4L.**

PATENTS

Nylon: Dyeing with Chromable Dyes. D. N. Sharing and Imperial Chemical Industries Ltd. B.P.631,073 of 20/10/1947: 26/10/1949. The examples describe the application of Solochrome dyes to nylon. Dyeing is from an acetic acid solution and the bath is gradually raised to the boil. Dichromate is then added and Cr is gradually absorbed. Finally a reducing agent (hydrosulphite) is added and the bath is kept hot until combination of the metal with the dye is complete. C.

Screen Printing Apparatus. Dan Walker and David Evans & Co. Ltd. B.P. 631,135 of 16/4/1947: 27/10/1949. The invention relates to means for overcoming a common difficulty in screen printing of lifting the frame with its screen neatly away from the material that is being printed. The mechanism secures that the frame is lifted diagonally so that the breaking of the adhesion between the screen and the material (after squeegeeing) proceeds from the corners. There are 30 claims and details are shown in six sheets of machine drawings. C.

Anthraquinone Vat Dyes. Alistair Livingston and Imperial Chemical Industries Ltd. B.P.631,213 of 30/6/1947: 28/10/1949. A new series of vat dyes is obtained by acylating a 4:8-diamino-1-aroylaminoanthraquinone with two molecular proportions of an appropriate derivative (*e.g.* the acid chloride) of a 1-nitro-(or 1-chloro)-anthraquinone-2-carboxylic acid. The aroyl group in the first base may be benzoyl or *p*-methoxybenzoyl. The examples refer to deep red-violet dyeings on vegetable fibres. C.

Copperable Disazo Dyes: Manufacture. Ciba Ltd. B.P.631,262 of 20/3/1947: 31/10/1949 (Conv. 11/4/1946 and 11/2/1947). Disazo dyes, free from sulphonic acid groups, are obtained by coupling tetrazotised 3:3′-dihydroxy-4:4′-diaminodiphenyl with a naphthol derivative that can couple in a position vicinal to an OH group in the presence of more than 25 per cent. of pyridine, calculated on the weight of the coupling mixture; *e.g.* 2:6-dihydroxynaphthalene, α-naphthol-4-sulphonamide or β-naphthol-6-sulphonamide. The examples refer to navy blue, bluish-violet and black dyeings, after coppering, on cellulosic fibres. C.

Apparatus for Liquid Treatment of Fabrics in Open Width without Tension. Rodney Hunt Machine Co. B.P.631,279 of 7/7/1947: 31/10/1949 (Conv. 26/10/1945). The claim is for an apparatus capable of supporting long webs of material (*e.g.* textile fabrics) in open-width festoons in a tank for treatment with dye liquor, steam or other fluid and advancing the web steadily without tension, regardless of shrinkage or extension as the liquid treatment takes effect. The essential feature is the provision within the lower loops of the web of rollers that are driven faster than the web and make frictional engagement with it. The rollers are provided with projecting ribs inclined outwardly and rearwardly so as to exert a smoothing-out action on the web. C.

Nylon Hosiery: Boarding. E. B. Bates. B.P.631,448 of 2/7/1945: 3/11/1949. The general claim is for "a method for the plasticising of textile articles constructed of thermoplastic yarns." More particularly, the invention relates to the boarding of nylon stockings. They are drawn over forms that are heated internally by electric resistance-heating means and conveyed in a succession through a chamber in which an atmosphere of steam is kept at 230-260° F. and atmospheric pressure. C.

Iron Carbonyl: Application in Mordant Dyeing. General Aniline and Film Corporation (assignees of H. W. Grimmel). B.P.631,765 of 30/5/1947: 9/11/1949 (Conv. 13/3/1945). Textiles (especially cellulose acetate, nylon and Vinyon) are impregnated with an aqueous emulsion of iron carbonyl (the emulsifying agent may be ethylene oxide/oleyl alcohol, "Emulphor A.S."), then with sodium hydrosulphite, and dyed with a mordant dye (*e.g.* ω-isonitroso ω-cyano acetophenone or α-nitroso-β-naphthol). C.

Alkylcellulose Solutions: Application in Pigment Dyeing. Interchemical Corporation. B.P.631,882 of 16/10/1946: 11/11/1949 (Conv. 9/11/1945). The claim is for the even dyeing of a fabric by means of pigments, without migration

and flocculation of the pigment on drying, by using a dispersion of the pigment in a solution of an alkylcellulose. On heating the fabric, the alkylcellulose is precipitated before appreciable vaporisation of water occurs. Details of the process are disclosed in 14 examples. C.

Bentonite: Application in Printing Pastes. United Turkey Red Co. Ltd. and H. B. Hampson. B.P.631,907 of 7/8/1947: 11/11/1949. The claim is for the use of bentonite as the sole thickening medium in pastes for screen or roller printing. Recipes are given for vat, azoic, Indigosol, acid and direct dye printing pastes. C.

Spirit Dye Composition: Application. G. R. B. Taylor (J. T. Taylor & Co.). B.P.631,928 of 2/1/1948: 11/11/1949. The invention relates particularly to the dyeing of leather, suedes, curtains, carpets, *etc.*, in lighter shades than the original. The composition, which is applied by immersion, spraying or brushing, consists of methylated spirit, a spirit dye, nitrobenzene (to assist penetration) and printers' or spirit white (to obtain opacity). C.

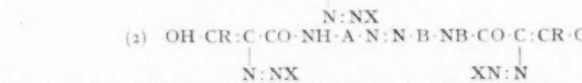
Nylon: Colouration with Vat Dyes. Alan Butterworth and P. F. Crosland. B.P.632,083 of 10/2/1947: 16/11/1949. The inventors offer evidence that certain vat dyes on nylon fibre remain in a relatively unaggregated condition in both oxidised and reduced states and are linked to the fibre by bonds of the proton exchange type, whereas on cellulose the oxidised dye molecules are considerably aggregated and held to the fibre by co-ordination linkages. Their invention consists in the use, in the dyeing of nylon, of substances that have a greater tendency than the dye molecules to form proton exchange linkages with the fibre and thus promote aggregation, so that the shade obtained, and the fastness to light, correspond more nearly with the results obtained on cellulose. Suitable agents are phenol, cresol, the hydroxybenzoic acids, cinnamic acid, β-phenylpropionic acid and β-phenylpropiolic acid. They are conveniently applied as an after-treatment on the dyed nylon. C.

Rayon Tyre Cord: Bonding to Rubber. Courtaulds Ltd. and Donald Entwistle. B.P.632,109 of 1/12/1947: 15/11/1949. To facilitate the bonding of rayon to rubber in the vulcanisation process (*e.g.* in making rayon cord tyres) the rayon is impregnated with a compound of a metal that forms an insoluble sulphide. Thus, a hydroxide or carbonate of Zn, Cd, Hg, Cu, Ni or Fe is deposited in the fibre by appropriate double decomposition or the acetate of the metal is dried into the fibre. C.

Knitted Underwear Fabric Pre-shrinking Apparatus. Munsingwear Inc. (assignees of Franklin Chatfield). B.P.632,516 of 31/3/1947: 28/11/1949 (Conv. 13/5/1940). The invention relates to apparatus for shrinking knitted fabric before making up into underwear. The fabric is carried through a steam chamber between two endless rubber belts, each of which is stretched over a pair of driven rollers, one at the entrance and the other at the exit of the chamber. The rollers at the entrance are driven faster than those at the exit so that the runs of belting between which the fabric is fed, and therefore the fabric itself, contract in their passage through the chamber. C.

Acetoacetyl Heterocyclic Aminoazo Coupling Components. Soc. anon. de Matières Colorantes et Produits Chimiques Francolor. B.P.632,595 of 13/5/1947: 28/11/1949 (Conv. 14/5/1946). The known inadequacy of acetoacetyl derivatives of aminoazo compounds of the benzene series as azo coupling components is overcome if they contain in their molecule one or more indazole, benzimidazole or benztriazole nuclei. Accordingly, the claim is made for polyazo dyes of the general formulæ

(1) BN:NA·NH·CO·C:CR·OH

(2) 

in which R is a hydrocarbon radical and A, B and X are aromatic, indazole, benzimidazole or benztriazole nuclei free from groups that confer solubility in water, at least one of the nuclei A, B and X being one of the said heterocyclic types. A large number of examples are tabulated. Those containing a heterocyclic nuclear N and also an alkoxy group, both ortho to the azo linkage, lend

themselves to after-coppering and then provide very deep browns and blacks on cotton. C.

Cotton Fabric Burnishing Machine. Bleachers' Association Ltd. and Alexander Melville. B.P.632,655 of 29/8/1946: 28/11/1949. The object of the invention is to provide a machine for enhancing the lustre of fabrics (especially of cotton and linen) without masking the weave, *e.g.* of poplins, limbrics and cambrics. The fabric is supported on a hard cylindrical, concave or flat base (*e.g.* of hard rubber) and substantial pressure is applied to it by means of a "comb-like formation having resilient smooth-tipped blades which trail over the fabric and penetrate between the yarns so that they are burnished without being flattened. The blades are of stainless steel about half an inch to one inch long, 0·008 in. thick and 0·125 in. wide, with the tips rounded or tapered and rounded. They are mounted in a holder, about 60-80 per lineal inch, and then in bars across the hard rubber base so that the blades follow the line of the weave. A series of bars may be used so that threads missed by the blades on the first bar are likely to be burnished by blades on later bars. The pressure on the bars is diminished from the first to the last. C.

Mono-azo Dyes for Wool, Silk and Nylon. Ciba Ltd. B.P.632,699 of 13/5/1947: 28/11/1949 (Conv. 31/5/1946 and 25/4/1947). The claim is for new azo dyes of the general formula

$$R_1{\cdot}CO{\cdot}NH{\cdot}C_6H_3(SO_2R_2){\cdot}N{:}N{\cdot}C_{10}H_4(OH)(SO_3H){\cdot}NHR_4$$
(1) (3) (4) (1') (8') (6') (2')

in which R_1 and R_2 are benzene radicals and R_4 is an alkyl radical of 1 to 6 C atoms. The examples relate to violet dyeings on wool. C.

Tennis Ball Manufacture. A. E. P. Milner. B.P.639,607 of 5/7/1950. A tennis ball with a seamless cover is made by covering a rubber core with an even layer of carded wool sliver and then subjecting it to a felting operation. Heat, moisture and pressure are used to cause the felting, the felting solution being soap and water. Up to 50 per cent. synthetic fibre may be mixed with the wool sliver. W.

Greasy or Waste Wool: Apparatus for Dry Scouring. P. Townsend. B.P. 641,678 of 16/8/1950. The rotation of a spiked drum simultaneously opens up the material and mixes it with powdered kaolin. The material is then blown through pipes, first to a vessel where it is given turbulent action, and then to a rotatable chamber where it is agitated by means of projecting plates. It then travels on an endless belt, receiving a fresh supply of kaolin in the passage, to a second chamber where the agitation is repeated. Means are provided for removing excess or contaminated kaolin. The material, which is not tangled or felted, is suitable for the woollen process. W.

Keratinous Fibres: Dyeing. E. B. Michaels and B. Beck (to L. R. Bruce Inc.). U.S.P.2,501,184 of 21/3/1950. Keratinous fibre, *e.g.* human hair, is dyed at body tolerance temperature with dyes normally non-substantive to it in the presence of a weak acid, *e.g.* acetic acid, and urea or a mixture of urea and alcohol. The acid opens the fibre and the urea causes the opened fibre to swell, thus disrupting the secondary linkages and increasing its permeability to the dye. W.

5—ANALYSIS, TESTING, GRADING AND DEFECTS

(A)—Fibres

Cellulose Acetate, Polyamide and Polyvinyl Filaments: Determination of Crystallite Bridge Factor. ("Die Bestimmung des Kristallitbrückenanteils in makromolekularen Kuntsfasern.") Arnult Sippel. *Kolloid-Z.*, 1949, **113**, 74-82. A method for determining the crystallite bridge factor in macromolecular fibres which has been developed theoretically[1] has been tested on data for the dependence of the tensile strength of cellulose acetate and other fibres on the average degree of polymerisation. Stretched cellulose acetate filaments have a higher proportion of crystallite bridges than the unstretched. Polyamide fibres, which are very elastic, and after-chlorinated polyvinyl chloride fibres, which are very plastic, have a high and a very low proportion of crystallite bridges, respectively. The data are consistent with the view that the macromolecules of stretched cellulose acetate filaments are folded. ([1]*J. Textile Institute*, 1950, **41**, A259.)

Cotton Fibres: Wax Content and Surface Area. P. B. Marsh, H. D. Barker, Thomas Kerr and Mary L. Butler. *Textile Research J.*, 1950, **20**, 288-297. The percentage of wax on the fibres of 62 samples of American Upland cottons and the surface area per unit weight of these fibres have been determined in order to study the relationship between the wax content and the surface area. The weight of wax per unit of fibre surface is a relatively constant quantity, though not absolutely constant. Results of melting-point determinations do not suggest the probability of important qualitative differences in wax composition at the time of boll opening among the American Upland cottons studied. Some Sea Island hybrids and Indian cottons were also examined. Weathering of the cotton in the field before harvest appears to lead to a higher content of wax of lower melting point. C—**5A.**

Cotton Fibre: Wax Content. P. B. Marsh, H. D. Barker, Thomas Kerr, Mary L. Butler. *Textile Research J.*, 1950, **20**, 297-298. Commenting on a recent paper by Heyn[1] on the relation between the wax content and maturity of cotton fibres, the authors call attention to ambiguities in Heyn's use of terms such as "perimeter" and "surface area". The advantages of the arealometer method over the wax content method for the determination of the surface area of fibres are summarised. ([1] *J. Textile Institute*, 1950, **41**, A132.) C—**5A.**

Cotton and Wool Fibre Wads: Porosity to Air. ("Further Study of the Flow of Air through Porous Media.") R. R. Sullivan. *J. Applied Phys.*, 1941, **12**, 503-508. The streamline flow of air through highly porous wads of cotton and wool fibres is studied. The rate of flow is twice as great for fibres parallel to the flow as for fibres perpendicular to it. Shape factors for the channels through which the flow takes place are determined and compared with those for the ideal case. The problem of measuring specific surface of high-porosity wads is discussed. C—**5A.**

Fibrous Proteins: Small-angle X-Ray Diffraction Studies. ("Deficiencies in Order of Large Size in Fibrous Systems.") R. S. Bear and O. E. A. Bolduan. *Acta Cryst.*, 1950, **3**, 230-235. A number of the fibrous proteins show small-angle diffractions of X-rays that lack evidence of the full complement of lattice translations characterising normal crystalline order. Criteria for the judgment of the number of ordered dimensions from diffraction phenomena are particularly simple at small angles and are derived. These involve examination of diffraction shapes and the displacement of diffractions with tilting of the fibrous specimen from the normal perpendicular relationship to the incident beam. The properties of the reciprocal-space rods and discs are treated geometrically. C—**5A.**

Single Fibres: Stress/Strain Curves and Thickness. ("Dehnungsversuche an Serien von Einzelfasern unter besonderer Berücksichtigung des Titers.") F. H. Müller. *Kolloid-Z.*, 1949, **113**, 82-90. The shapes of stress/strain curves obtained with various fibres are characteristic of the nature and thickness of the fibres. In general, slow deformation leads to greater maximum extension and to lower tensile strength. Curves obtained with various natural and synthetic fibres are reproduced. (Previous paper: see *J. Textile Institute*, 1950, **41**, A204.) C—**5A.**

Single Fibres: Variations in Fibres after repeated Swelling and Shrinking. ("Über Veränderungen von Fasern nach Quellungs-Kreisprozessen.") F. H. Müller. *Kolloid-Z.*, 1949, **113**, 91-96. The effect of repeated swelling and shrinking on the maximum extension and tensile strength of three types of fibres is described [(1) slowly and (2) quickly coagulated viscose, and (3) extruded and hardened protein]. With (2) and (3) maximum extension after the swelling treatment was less than before the treatment, but the tensile strength was almost unchanged. In (1) there was a negligible change in maximum extension, but increase in tensile strength. The treatment leads to a reduction in knot, loop, and tensile strengths. No change in tenacity was observed with cotton fibres. Explanations for the changes are discussed. C—**5A.**

Single Fibres: Stress/Strain Curves under Repeated Loading. ("Zug-Dehnungsdiagramme mit eingeschobener Entlastung an verschiedenen organischen Fasern und bei verschiedenen Dehnungsgeschwindigkeiten.") F. H. Müller. *Kolloid-Z.*, 1949, **113**, 159-165. Stress/strain data have been obtained with periodic unloading and at various rates of extension for regenerated protein (Tiolan), polyvinyl (Pe Ce), viscose, polyamide (Perlon), and wool fibres. The measurements yield information about the plastic and elastic components of deformation. C—**5A.**

Single Fibres: Stress/Strain Curves at Different Temperatures. ("Zug-Dehnungsdiagramme mit variierter Temperatur an verschiedenen organischen Fasern und bei verschiedenen Dehnungsgeschwindigkeiten.") F. H. Müller. *Kolloid-Z.*, 1949, **113**, 166-170. Stress/strain curves obtained with several synthetic fibres (Pe Ce, polyvinyl alcohol, Perlon, polystyrene) at different temperatures are reproduced and discussed. In general, rise of temperature leads to larger extension values, but a polyamide fibre (stretched Perlon) was insensitive to temperature changes. A polyvinyl chloride fibre (Pe Ce) underwent transition at about 80° C., above which temperature no flow phenomena were observed. The phenomena of cold drawing are discussed. C—**5A.**

Textile Fibres: Measurement of Swelling by Centrifuge Method. ("La Methode par Centrifugation pour la mesure du Gonflement des Fibres.") J. M. Preston and M. V. Nimkar. *Bull. L'Inst. Text. France*, 1950, No. 18, 53-58. The swelling of fibres is briefly discussed in relation to the factors which control it and the properties which it affects. The removal and estimation of imbibed water and capillary water by use of the centrifuge are considered. It is the imbibed water which causes swelling and the presence of capillary water gives erroneous results. The amount of capillary water can be reduced by use of surface-active agents, and when this is carried out the centrifuge method gives a better estimate of the water causing swelling. Data obtained by the normal and modified centrifuge methods are given for a number of fibres. (See also *J. Textile Institute*, 1950, **41**, A521.) C—**5A.**

Crimp Determination. ("Bestimmung der Kräuselung.") Swiss Association for Testing Technical Materials. *Text.-Rundschau*, 1950, **5**, 321-322. SVMT 25, B1018. Crimp curves are defined as flat, normal, high, excessive, and uneven. The number of crimps per centimetre is counted. The degree of crimp is shown by the percentage ratio of the length of the stretched fibre to the length of the crimped fibre. W—**5A.**

Wool Fibres: New Method of Determining Resistance to Breakage. ("Nouvelle Méthode d'Etude de la Résistance a la Rupture des Fibres de Laine.") F. Maillard, O. Roehrich, and M. J. Hitter. *Bull. Inst. Text. France*, 1950, No. 19, 9-20. Chevenard's micro-strength machine (*J. Textile Institute*, 1948, **39**, A26) was used to determine breaking load and breaking elongation of wool fibres. The tests were made on prepared bundles of fibres. Results for different grades of wool are given. W—**5A.**

Greasy Wool: Specification for Washing. ("Waschvorschrift für rohe Wolle.") Swiss Association for Testing Technical Materials. *Text.-Rundschau*, 1950, **5**, 281. Swiss Standard SVMT 25, A 2102. A method is described for washing greasy wool before determining commercial weight or other physical properties. Greasy wool is steeped for at least 4 hr., washed in soda ash solution for 30 min. at 40° C., rinsed, washed in soap solution for 30 min. at 35° C., rinsed for 3 periods of 10-15 min. each at 35° C., dried and conditioned. The liquor ratio is 1 : 100 for all baths. W—**5A.**

Oiled Wool: Specification for Washing. ("Waschvorschrift für geschmälzte Wolle.") Swiss Association for Testing Technical Materials. *Text.-Rundschau*, 1950, **5**, 282. Swiss Standard SVMT 25, A 2103. Methods are described for washing oiled wool before determining commercial weight or yarn count. Combed wool is washed in soda ash solution for 30 min. at 35° C., rinsed at 35° C., washed in soap solution for 15 min. at 40° C., rinsed for 3 periods of 15 min. each at 35° C., dried and conditioned. Carded wool is washed in soda ash solution for 15 min. at 40°-45° C., rinsed at 35° C., again washed in soda ash solution for 15 min. at 40°-45° C., again rainsed at 35° C., washed in soap solution for 15 min. at 40°-45° C., rinsed 3 times, dried and conditioned. The liquor ratio is 1 : 50 for all baths. W—**5A.**

(B)—YARNS

Roving Irregularities: Determination. Wool Industries Research Association. *Textile Recorder*, 1950, **68**, No. 809, 91-92. The roving levelness tester developed by the Wool Industries Research Association is described. It measures indirectly the weight per unit length of the roving by compressing it into a rectangle of constant width and measuring the height of the rectangle. The instrument can be used for all worsted material from the thickest top to the finest roving and, in many cases, though with more moderate accuracy, for woollen slubbing and

woollen yarns. It has also been tried successfully on cotton, synthetic fibre and flax slivers. The tester is also of value in the investigation of machine faults causing recurrent thick or thin places. W—**5B.**

Worsted Drawing and Spinning: Some Causes of Irregularity. D. R. Cox and J. Ingham. *J. Textile Institute*, 1950, **41**, P376-P402. The causes of irregularity in worsted drawing are discussed and the theory of the effect of sequences of drafts on sliver irregularity is outlined, including the application of the variance length curve to the description of irregularity; a formula is developed for the effect on yarn variation of top variation, doublings and irregularity introduced in the drafting operations. Experiments on the variability of weight per unit length are described, together with its relation to the theoretical work discussed. W—**5B.**

Woollen Yarn Irregularities: Some Causes. G. H. Thorndike. *J. Textile Institute*, 1950, **41**, P416-P432. Some of the different factors which are likely to cause variation in the levelness of woollen yarns are discussed, with particular reference to those arising from carding mechanisms such as the hopper, the intermediate feed and the condenser. Techniques for estimating the magnitude of these effects are described and typical results included. W—**5B.**

French Drawn Rovings and Yarns: Irregularities. P. P. Townend and T. S. Chow. *J. Textile Institute*, 1950, **41**, P403-P415. An investigation was made of the effect of doublings, draft and number of operations on the regularity of rovings and yarns produced on the Continental system: a 64s top was converted to a series of 6-dram rovings by eleven schemes using different doublings, drafts and number of operations, the rovings being subsequently spun to 30s worsted count and the various yarns and rovings compared for regularity of the short term order. It was found that in order to obtain regular rovings and yarns at least two doublings must be used at each operation, and the draft must also be as low as possible, further that high draft is injurious to regularity and that doublings tend to smooth out the irregularity. It was concluded that single end drawing was unsatisfactory, whilst the use of two operations in reducing the top to the roving resulted in the greatest irregularity. As a result of these experiments it was concluded that with the present method of drafting and short fibre control no shortening of the process of manufacture can be effected without impairing the quality of rovings and yarns. W—**5B.**

(C)—FABRICS

"Warerite" Hosiery Inspection Tables. ("Nylons are Precious.") Warerite Ltd. *Textile Weekly*, 1950, **46**, 32. An illustration is given of a hosiery room fitted with inspection tables made of wood veneered with a dark green plastic and panels of the same plastic. The surface is so smooth and free from "snagging" points that there has been a reduction in the proportion of rejected stockings. C—**5C.**

7—LAUNDERING AND DRY-CLEANING

Non-ionic Detergents and CMC. J. Riley. *Power Laundry*, 1950, **82**, 40-1, 45. Lissapol N (a synthetic detergent) and Cellofas B. (CMC) two I.C.I. products were used experimentally in a Leicester laundry for nine months for washing all classifications. Results showed that the washing of all classifications was satisfactory. The initial soiling was moderately heavy for an industrial area but dirt removal was excellent and colour well maintained over the trial period. Starched work and greasy articles such as engineers' overalls, showed exceptionally good results. These results were obtained with water of 5-6° hardness, the use of the softener being discontinued. The use of the synthetic CMC mixture was also economical. La—**7.**

Drycleaning Equipment: Broadbent Non-Flam Drycleaning Machine. *Power Laundry*, 1950, **82**, 64-5. An illustrated article describes the operation of the machine and maintenance instructions. An interesting feature of this soundly designed machine is the still. Soiled solvent passes into this where it is vaporised, the sludge falling to the bottom of the boiler. From the boiler vapour passes through a condenser, and the liquid passes into the tanks. Sludge is removed from a central discharge valve, no uncoupling or breaking of joints being necessary. Maintenance has been reduced to a minimum, including lubrication, cleaning strainers and sight glasses, and occasional belt adjustment. La—**7.**

Laundry Marking Systems: Polymark Process. J. Riley. *Power Laundry*, 1950, **82**, 509-11. The mark consists of a tab woven from a thermo-plastic that softens only at a temperature exceeding those met during laundering. The tab is attached to the article by a solvent followed by pressure under heat, a corner being left free for speedy removal. The process is machine-operated. One disadvantage is that the mark cannot be applied to acetate rayon which is soluble in the solvent. La—7.

PATENTS

Washing Machines: Fluid Control. Dole Valve Co. (U.S.A.). B.P.627,593 of 11/8/1949. A fluid control system includes thermostatic mixing valves for hot and cold water and float valves to cut off the supplies when the required level has been reached in the machine. Two thermostatic mixing valves set at different temperatures are incorporated, thus giving three different temperatures, the third being an intermediate temperature obtained by allowing both mixing valves to operate at once. Constant flow devices are incorporated in the system immediately following the mixing valves in order to minimise the effect of varying water pressures. La.

Washing Machines. Prosperity Co., Inc. (U.S.A.). B.P.629,026 of 9/9/1949. A washing machine is designed in which the inner cage is not supported by the usual bearings situated on its axis of rotation but rests on two power-actuated rollers, or two pairs of rollers mounted within the lower part of the outer cage. La.

Washing Machines: Unloader. Prosperity Co., Inc. (U.S.A.). B.P.629,027 of 9/9/1949. A washing machine similar in construction to that described in B.P.629,026 has an end door. In order to unload the machine the cage is rotated until two of the internal ribs are immediately opposite each other in a horizontal plane. The unloading device is a trough which completely fills the space between these ribs and which is shallow at the back but is more deeply curved towards the front of the machine. In use, it is inserted upside down between the two ribs and the cage is rotated half a turn so that the entire load rests on the trough and the two ribs. The clothes slide readily down the unloader and, if preferred, the unloading may be facilitated by arranging the drive in such a way that the cage can be rocked or given a full rotation at times during the unloading of the machine. La.

Laundered Textiles: Treatment with Ultra-violet Radiation; Apparatus. Lionel Silver and V. A. Douris. B.P.631,532 of 24/4/1947: 4/11/1949. (Addition to B.P.592,707.) The invention is concerned with modifications in previous apparatus[1] (rotating drum in a chamber illuminated by a bank of ultra-violet lamps) for exposing laundered fabrics to ultra-violet radiation. They consist in a simplification of the mode of access to the drum and in means for shielding the radiation while the door in the chamber is open. ([1]See *J. Textile Institute*, 1948, **39**, A90.) C.

Laundry Presses. Prosperity Co., Inc. (U.S.A.). B.P.633,495 of 19/12/1949. A press is so designed that tubular articles such as shirt sleeves or bodies may be pressed completely in one lay. The tubular portion is drawn over a pressing member which is roughly elliptical in section and which can be expanded in width by inflatable tubes on either side so as to fill the tubular article. This pressing member is mounted between two opposing pressing faces of greater width than the member. As these two pressing faces are brought together the air is squeezed out of the inflated tubes which, however, still hold the tubular article at full width and allow it to be pressed completely in the one operation. La.

Finishing Plant. Bill Glover Inc. (U.S.A.). B.P.634,698 of 22/3/1950. A steam vacuum finisher comprises a pedestal and a shallow pan covered by a perforated sheet. The pan contains a heating coil which is attached to, and heats, the perforated sheet. There is also a nozzle for injecting steam into the pan beneath the sheet and an air ejector for imposing vacuum conditions on the pan. The steam supply is controlled by an actuating device common to the nozzle and the ejector. This device permits steam to reach either the nozzle or the ejector according to the direction in which it is moved from the neutral position. La.

Tumbler Dryers. J. Haydock. B.P.636,220 of 26/4/1950. A tumbler drying machine is so arranged that it can be run at a normal speed which causes the

load to tumble, or at a higher speed which, through centrifugal force, causes the load to adhere in a thin layer to the rotating cage. Speeds of 50 r.p.m. and 25 r.p.m. are mentioned for a cage of 46 in. diameter and the periods of high speed may be about four times as long as those of low speed; for example 16 seconds and 4 seconds respectively. It is claimed that the periods of tumbling give the required soft, full feeling to the goods being dried whereas the lack of movement during the high speed periods avoids the excessive attrition to which fabrics are said to be subjected if tumbled during the whole period needed for drying. In the example quoted, the air is not recirculated but the hot exhaust is passed through a heat exchanger which warms the cold inlet air. A cylindrical lint screen is incorporated and may be revolved by hand against a scraper blade in order to remove accumulations of lint. La.

Ironing Machines. Manlove Alliott & Co. and W. A. Hastie. B.P.636,437 of 26/4/1950. The clothing for the roller of a laundry ironing machine is resiliently supported by springs. Each spring is held by a bolt which is passed through a flanged cap and then through the spring before being screwed radially into the roller. The flange of the cap is directed outwards so that the clothing rests on it. The head of the bolt is enclosed by the hollow portion of the cap, the inner end of which is provided with ventilating openings to allow steam which enters the caps from the clothing to pass into the space between the clothing and the roller. La.

8—BUILDING AND ENGINEERING

(A)—Construction and Maintenance of Buildings and Plant

Woollen Processing Plant: Layout. ("Entwurf einer Volltuchfabrik mit Streichgarnspinnerei.") W. Schäfer and R. Feiert. *Textil-Praxis*, 1950, **5**, 467-469. The best layout for a woollen mill carrying out all processes from carding to the finished cloth is discussed; a combination of single and double storied buildings is recommended, designed to reduce transport costs to a minimum. W—**8A.**

(D)—Power Transmission

Graphite: Lubricating Action. ("Elements de Graissage.") N. Chianovitch. *Rayonne*, 1950, **6**, No. 3, 123-124. A brief account is given of the action of graphite on the lubricating properties of oils and greases. The "wetting" power and ability of a lubricant to "stick on" a surface are considered on the basis of the forces acting between lubricant and surface. C—**8D.**

Textile Machinery: Lubrication. *Oil* (Manchester Oil Refinery), 1950, **1**, No. 7, 19-21. A brief illustrated account is given of the lubrication of machinery used for opening, carding, drawing, spinning, weaving, and hydraulic systems. C—**8D.**

Electronics in the Textile Industry. L. T. Jester, Jun. *Manual of the Textile Industry of Canada*, 1950, pp. 70-75. Electronic equipment is described for the following purposes: preventing heavy felt looms from banging-off; controlling the loom let-off drive; removing twist from cloth finished in rope form; detecting seams in cloth travelling at high speeds; determining moisture content in a continuously-moving fabric; dielectric heating; testing yarn evenness; testing yarn tension on a spinning frame; measuring the thickness of materials by means of a gauge combining the use of electronics with radioactive energy. W—**8D.**

(I)—Waste Disposal

Cholesterol: Preparation from Wool Grease by means of Addition Products. J. Th. Hackmann. *Rev. Trav. Chim. des Pays-Bas*, 1950, **69**, 433-438. A simple method for preparing cholesterol from the unsaponifiable part of wool grease consists in the formation of addition compounds of cholesterol with inorganic metal salts. These addition compounds are separated from the other components by means of a solvent in which the addition compound is not soluble. The addition product is then decomposed by water, yielding cholesterol, which is purified by crystallisation. W—**8I.**

Scouring with Synthetic Detergents. See Section 4(B). W.

9—SCIENCE

Asiatic Cotton Geographical Races: Classification. J. B. Hutchinson. *Empire Cotton Growing Review*, 1950, **27**, 123-127. The perennial forms of *G. arboreum* in Africa are assigned to two races, race *soudanese* in the Sudan and West Africa, and race *indicum* on the East African coast and in Madagascar.

G. herbaceum is classified into five races, *persicum* in south central Asia, *kuljianum* in Chinese central Asia, *acerifolium* in North Africa and Arabia, *wightianum* in western India, and *africanum* in South Africa. C—**9.**

Cotton Plants: Growth, Transpiration and Meteorological Factors. P. S. Sreenivasan. *Proc. Indian Acad. Sci.*, 1949, **30**, B, 134-154 (through *Brit. Abstr.*, 1950, BIII, 118). Plants of two types of cotton were grown in pots with soil moisture kept at 16, 24, and 32 per cent. Measurements were made of the height of the plants; number, size, and rate of development of leaves; number of internodes and mean internodal length; number and locular composition of bolls; number of seeds, weight of seed cotton, and total yield of lint; amount of water transpired and its relation to evaporation, hours of sunshine, and maximum and minimum temperature. The optimum moisture for the growth and cotton yield of the American variety was higher than that for the Asiatic variety. The main factors governing the amount of transpiration were the number of leaves and the evaporating power of the atmosphere. C—**9.**

Tree Cotton: Root Development in Yunnan. K. S. Cheng. *Empire Cotton Growing Review*, 1950, **27**, 119-122. The root systems of two tree-cotton plants are illustrated. Growing under Kaiyuan soil and moisture conditions the plant has a vertical penetration of over 15 feet and the tap roots may pass through several layers of hardpan varying from 1-3 feet in thickness. With a deep soil of uniform texture the tap root grows almost vertically downwards, whilst a gravelly hardpan makes it pursue a zigzag course. Small stones and a moist fertile layer may both help in the development of branch roots. The outward spread of roots usually exceeds 6 feet. These roots run close to the surface. The important feeding area lies in the upper two feet. These results show that digging a large planting hole is unnecessary and a good surface soil is likely to be more effective. C—**9.**

Cellulose: Microbiological Degradation; Mechanism. R. G. H. Siu. *Textile Research J.*, 1950, **20**, 281-288. The microbiological breakdown of the cotton fibre is pictured as follows: On germination, the micro-organism secretes enzymes which digest the cuticle. The fungal hyphæ then penetrate the secondary cellulosic wall directly into the lumen, where profuse growth ensues. Bacteria, on the other hand, adhere to the outer surface and "pit" their way inward. In both cases, digestion of the cellulose occurs at the point of immediate contact with the organism. The effect of crystallinity and orientation on the rate of microbiological action is mentioned. Degradative transformations of the cellulose molecule are discussed and direct breakdown of a linear polysaccharide into glucose, without the intervention of cellobiose, is postulated. C—**9.**

Silkworm Yellow Pigment: Isolation. ("Xanthopterin obtained from the Skins of the Yellow Mutant of *Bombyx mori*.") Y. Hirata, K. Nakanishi and H. Kikkawa. *Science*, 1950, **111**, 608-609. A brief account is given of work which has led to the identification as xanthopterin of the pigment from the skins of the yellow mutant of *Bombyx mori*. C—**9.**

Large-scale Paper Chromatography. Charles Yanoksky, Elga Wasserman and D. M. Bonner. *Science*, 1950, **111**, 61-62. Experiments are reported on large-scale chromatography. An apparatus that includes a modified kymograph is described in which the paper is attached to a revolving drum and the liquid is fed to the paper with a narrow capillary tube. By this method a 5 ml. fraction of a methyl alcohol solution has been applied to a Whatman No. 1 paper in less than 15 minutes and at the same time a narrow band of material has been maintained. C—**9.**

Two-way Paper Chromatograms: Mass-production. S. P. Datta. *Biochem J.*, 1950, **46**, xlii. A brief illustrated description is given of an apparatus by which 12 paper chromatograms can be run simultaneously. C—**9.**

Long-chain Fatty Acids: Separation by Reversed-phase Partition Chromatography. G. A. Howard and A. J. P. Martin. *Biochem. J.*, 1950, **46**, 532-538. A reversed-phase method of partition chromatography has been devised in which the less polar of the two phases is the stationary phase. This method has been applied to the separation of the C_{12} to C_{18} fatty acids. Saturated acids have been separated, and mixtures of saturated, unsaturated, and substituted acids have been analysed. Results are shown. C—**9.**

Organic Compounds: Analysis by Infra-red Spectrophotometry. J. E. Tyler. *Interchem. Review*, 1950, **8**, 91-103. A general account is given of the use of infra-red spectrophotometry in the analysis of organic compounds. The construction of infra-red spectrophotometers is discussed and absorption curves are given for various compounds. C—**9.**

Amylose Hydrolysis Products: Fractionation by Electrokinetic Ultrafiltration in Agar-agar Jelly. R. L. M. Synge and A. Tiselius. *Biochem. J.*, 1950, **46**, xli-xlii. The hydrolysis products of amylose have been fractionated by electrokinetic ultrafiltration in agar-agar jelly. The separation may be attributed to a molecular-sieve mechanism. The method may prove generally useful for separating substances that are chemically similar but differ in molecular weight. C—**9.**

Cathode-ray Oscilloscope: Use as a Null-Point Detector in Measuring the Electrical Conductivity of Solutions. R. N. Hazeldine and A. A. Woolf. *Chemistry & Industry*, 1950, 544-545. A standard Wheatstone bridge circuit has been used with a cathode-ray oscilloscope as a visual null-point detector in the measurement of the electrical conductivity of solutions. The apparatus is described and illustrated. Advantages of the method are mentioned. C—**9.**

Cellulose and Nitrocellulose: Heats of Combustion and Formation. R. S. Jessup and E. J. Prosen. *J. Research Natl. Bur. Stnds.*, 1950, **44**, 387-393. The heats of combustion of cellulose and nitrocellulose (samples from cotton linters and from wood pulp) have been obtained by bomb calorimetric measurements at 30° C. Heats of wetting were also determined in order to convert the data for wet materials into results for dry materials. From the tabulated results and the heats of formation of carbon dioxide and water, values of the heat of formation of the celluloses and cellulose nitrates are calculated. Empirical equations are given expressing the heat of combustion and heat of formation of the cellulose nitrates as functions of nitrogen content. C—**9.**

Heat of Wetting Calorimeter. ("A Calorimeter for the Measurement of Small Amounts of Heat Liberated Slowly.") W. Hirst and M. Kerridge. *J. Sci. Instruments*, 1950, **27**, 161-163. A calorimeter for the measurement of quantities of heat of the order of 1 to 10 cals. is described. The heat leakage remains approximately constant, and determinable to $\pm 0{\cdot}1$ cal./hr., over periods of several hours. Slow reactions can thus be followed, and the calorimeter has been used to measure heats of wetting. Some experimental curves are shown. C—**9.**

Triphenylmethane Dye Surface Films: Formation and Strength. ("Über die Entstehung und Festigkeit von Oberflächenmembranen an Lösungen.") A. Buzágh and J. Szönyi. *Kolloid Z.*, 1949, **113**, 146-155. A torsion method is described for measuring the shearing strength of the surface film on solutions of certain triphenylmethane dyes. The influence of electrolytes on the strength has been studied. Fuchsin, methyl violet, eosin, erythrosin, phloxine, and water blue form a group characterised by giving strong films even without added electrolytes. Crystal violet, malachite green, brilliant green and acid green require electrolytes. The difference is reflected in the polar character of the two groups. Films on basic dyes are weakened by the addition of acids and strengthened by alkalis. Acid dyes behave in the opposite sense. Water blue, being amphoteric, gives films that are weakened by both acids and alkalis. An increase in degree of dispersion of the dye is accompanied by weakening of the film, and *vice versa*. C—**9.**

Capillary Flow: Heat Effects. H. C. Brinkman. *Appl. Sci. Res.*, 1950, **A2**, 120-124. A theoretical paper. The temperature distribution in a capillary due to the energy dissipation of viscous flow is calculated, the heat conductivity of the fluid and the transport of heat by convection being taken into account. C—**9.**

Cystine: Microbiological Determination in Foods and Proteins. V. Mahadevan. *India: J. Sci. Ind. Res.*, 1950, **9**, 143-147. Using a cystine-free basal medium, the growth response of *Lactobacillus arabinosus* to the addition of increasing amounts of cystine is determined, the acid produced in a given time being taken as a measure of the amount of the added cystine in the medium. A standard reference curve shows the relation between acid produced and concentration of cystine. The results obtained for wool and rat hair are compared with those reported in the literature. W—**9.**

Wool Keratin: Molecular Structure. A. C. Goodings. *Textile Research J.*, 1950, **20**, 454-466. From a consideration of the X-ray diffraction data and the

densities of silk, nylon, and wool, an alternative structure is deduced for wool keratin, which is then examined in terms of the lateral spacings and axial repeat and the long range elasticity of the wool fibre. The contraction of other protein fibres, it is suggested, may be explained on the basis of other folded configurations, which may be regarded as extensions of the proposed structure for wool keratin. Freedom of a protein molecule to assume a folded configuration may be associated with its reactive side groups, and the differences in the normal structural pattern of different proteins may perhaps be correlated with differences in chemical composition, particularly the dicarboxylic and diamino acid contents. W—**9.**

Wool: Reaction Kinetics with Chlorine Solutions. Part I. Diffusion across a Liquid Layer. P. Alexander, D. Gough, and R. F. Hudson. *Trans. Faraday Soc.*, 1949, **45**, 1058-1066. It is shown that the rate-controlling step in the reaction of a solution with wool is either diffusion through a liquid film or diffusion in the fibre, the two processes being characterized by activation energies of 6 and 12 kcal./mole respectively. The conditions of film diffusion are determined and the effect of agitation and temperature on film thickness calculated and related with experiment. It is deduced that the temperature coefficient of the film diffusion-controlled reaction should be greater than that of diffusion of chlorine in water. W—**9.**

Wool: Reaction Kinetics with Chlorine Solutions. Part II. Diffusion within the Fibre. P. Alexander, D. Gough, and R. F. Hudson. *Trans. Faraday Soc.*, 1949, **45**, 1109-1118. The conditions under which the reaction is controlled by diffusion within the fibre are determined. It is shown that the rate is almost proportional to initial concentration (*i.e.* $t_{\frac{1}{2}}$ constant) and it is concluded that diffusion proceeds from a changing surface concentration. A kinetic expression for these conditions is derived and compared with the diffusion equation of Wilson (*Phil. Mag.*, 1948, **39**, 48). The mechanism of fibre diffusion is discussed and the high energy of activation step is considered to be hole formation in the fibre-water gel. W—**9.**

Wool: Reaction of Oxidising Agents. (2) The Sorption of Hydrogen Peroxide. P. Alexander, D. Carter, and C. Earland. *Biochem. J.*, 1950, **47**, 251-254. Wool, silk and nylon, but not cotton, sorb hydrogen peroxide from aqueous solution and the concentration range 0·45 per cent. has been studied. The sorption has not reached its limit at 45 per cent., but stronger solutions could not be studied. With wool the sorption is independent of the *pH* of the peroxide solution in the range *pH* 2·5-9, but decreases at both lower and higher *pH* values. It is concluded that the hydrogen peroxide is held by both the amino and carbimino groups and that the sorption process resembles the formation of complexes with simple organic nitrogen-containing compounds such as urea. W—**9.**

Patents

Dextrin and Soluble Starch: Production. H. R. Blattmann, A. H. Blattmann and Margaret H. Tesdorpf (Blattmann & Co.). B.P.630,914 of 31/3/1947: 24/10/1949 (Conv. 2/4/1946 and 8/1/1947). A process for producing soluble starches, dextrin and the like comprises placing powdered starch in an autoclave fitted with stirring, heating and cooling means, evacuating, admitting hydrogen chloride gas until the *pH* of the mass is below 4·5, drying under vacuum until the moisture content is below 1 per cent., at temperatures not exceeding 125° C., raising the temperature to 130-170° C. according to the degree of degradation desired, holding the temperature until the desired product results, and cooling in the autoclave. C.

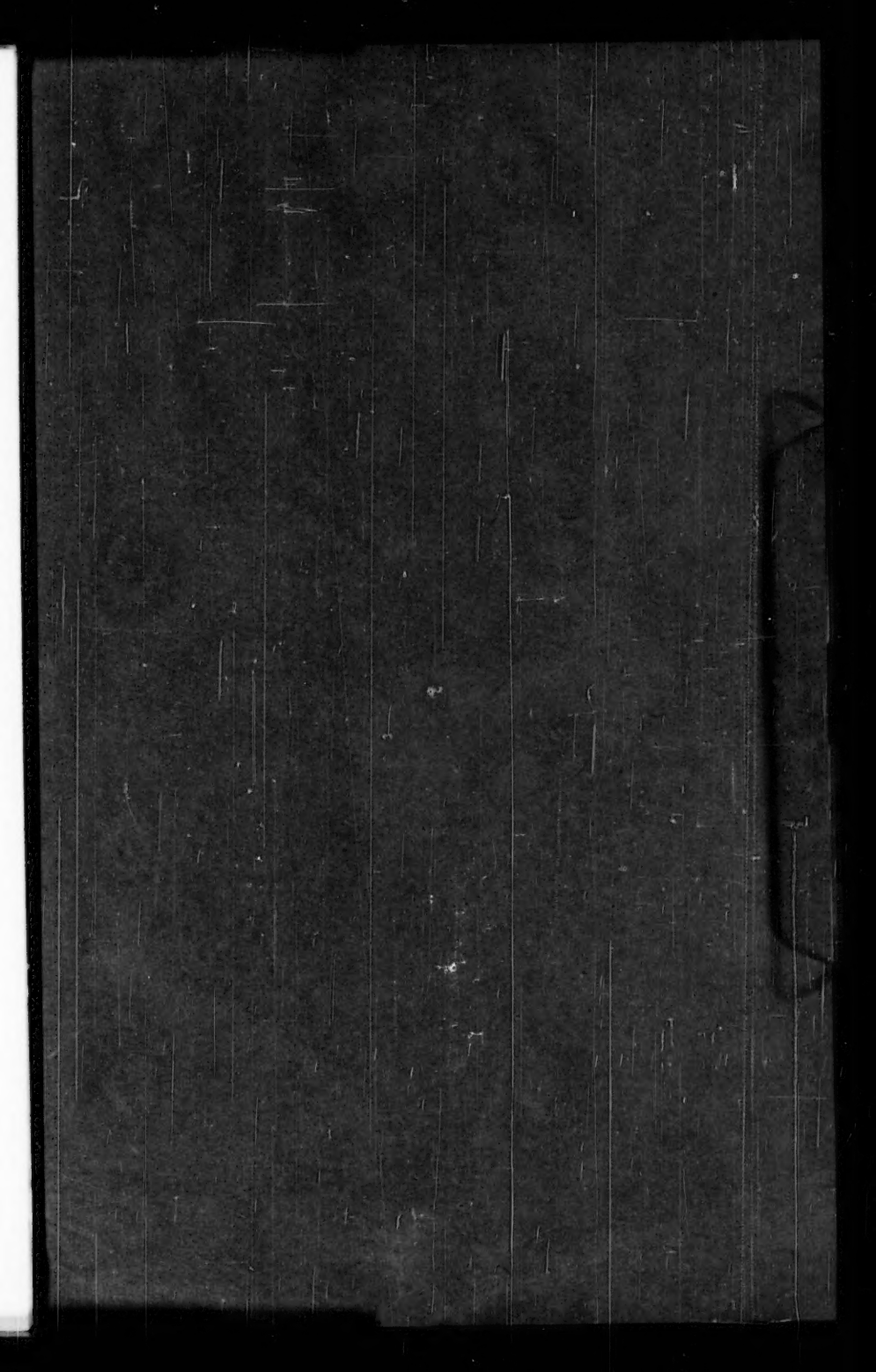
Starch Derivatives: Production. H. J. Fitzpatrick (for National Starch Products Inc.). B.P.631,242 of 29/8/1946: 31/10/1949. The invention is based on the discovery that an aqueous suspension of non-gelatinised starch reacts with an acid anhydride if the *pH* is kept on the alkaline side, *e.g.* between 7 and 11; thus, the anhydride and caustic soda may be added in alternate portions until the desired modification of the starch is effected. According to the type of starch and acid anhydride, products that differ in characteristics may be obtained, some suitable for textile sizing and finishing, some for sizing paper and others for food products. Three main groups are disclosed in the 16 examples set out in the specification. (1) *Non-gelling starch.* Corn starch when treated

with acetic, propionic, butyric or phthalic anhydride in an alkaline suspension gives a product that on cooking with water forms a paste that remains fluid on cooling. (2) *Starches with greater capacity for absorbing water.* Succinic, maleic, glutaric and citraconic acids yield products that behave like gum tragacanth or the alginates; thus on cooking with as much as 50 times their bulk of water the "pastes" have a quite definite "body". (3) "*Inhibited*" *starches.* Granules of tuber and waxy maize starches when treated with adipic and azelaic anhydrides do not so easily swell on cooking with water so that their pastes do not set to rigid gels or become rubbery on cooling but remain like smooth salves. C.

Photo-electric Colorimeter. English Electric Co. Ltd., R. J. F. Howard and E. T. Warburton. B.P.632,593 of 14/4/1947: 28/11/1949. Apparatus for determining or comparing colour content comprises a source of illumination for the specimen, a photo-electric device on to which light is reflected by, or transmitted through, the specimen, and a set of red, green and blue filters arranged to move in sequence (*e.g.* by mounting them on a drum) across the path between the source and the photo-electric device. The output of the photo-electric device is applied through an amplifier to indicating means (*e.g.* a cathode-ray tube) to provide a steady indication of the output at the repetition frequency resulting from the cyclic appearance of any one of the filters. Switches are also provided so as to establish separate amplifying channels for the outputs corresponding with the three filters and the gain of each channel is adjustable. In use, the gains of the three filters are adjusted so that the corresponding vertical traces on the cathode-ray screen are equal in height. The standard specimen is then replaced by a comparison specimen and any difference in shade is revealed by a change in height of one or more of the traces. C.

10—ECONOMICS

Costing: Fundamentals. 1.—Need for Uniform System for Wool Textiles. S. Howard Withey. *Textile Mercury and Argus,* 1950, **123**, 429, 431. This is the first of a series of articles which consider methods of recording all expenditures that enter into the cost of operating a wool textile manufacturing business, and bases for the systematic allocation of overheads and the computation of depreciation, *etc.* This introductory article shows the lines of approach to a uniform costing system, and the value of such a system in promoting efficiency and economy in production. W—**10.**

11—INDUSTRIAL WELFARE, INDUSTRIAL PSYCHOLOGY AND EDUCATION

Textile Research and Developments in Materials and Machinery. *Wool Record,* 1950, **78**, 601, 603. The use of calcium alginate yarn in the weaving of lightweight wool fabrics and in the manufacture of seamless socks is mentioned. Other subjects include abrasion resistance and laundering shrinkage of nylon/wool blends, impregnation of textiles with metal particles in a resin, electronic protection motion for increasing the speed of looms, a new enclosed dye-jig, and neutralisation of alkaline scouring wastes with acid dyeing wastes. W—**11.**